Remarks

The Office action mailed June 27, 2006, has been reviewed and carefully considered. Claims 16 and 21 have been amended for purposes of clarification (i.e., claims 16 and 21 have been amended to delete the first structure). New claims 54-59 have been added. Non-elected claims 27, 32, 37, 42, 43 and 48-53 have been canceled without prejudice toward filing a divisional application(s). Entry of these amendments is respectfully requested.

35 U.S.C. §112 Rejections

It is respectfully submitted that the amendments to claims 16 and 22 have obviated all of the 35 U.S.C. §112 rejections. Accordingly, the 35 U.S.C. §112 rejections should be withdrawn.

35 U.S.C. §102 Rejections

Claims 16-22 have been rejected under 35 U.S.C. §102(b) over Pieken et al. (WO 98/30575). Pieken et al. discloses that Diels-Alder cycloaddition reaction can be used to conjugate macromolecules to each other. Page 23, lines 8-13 of Pieken et al. state that:

> "Macromolecules such as nucleic acids, oligonucleotides, proteins, peptides, carbohydrates, polysaccharides, glycoproteins, and lipids generally do not contain moieties that can undergo such a cycloaddition reaction. Thus, by specific introduction of a diene and dienophile reaction partner, macromolecule conjugation, derivatization, or multimerization becomes possible with unprecedented specificity."

However, the vast majority of Pieken et al. is dedicated to describing their preferred embodiment – conjugation of oligonucleotides to other macromolecules. In particular, all of the specific examples disclosed in Pieken et al. involve conjugating an oligonucleotide.

In contrast, the conjugate of claim 16 and the immobilized biomolecule of claim 22 all are specifically directed to a combination of (i) a carbohydrate with (ii) a peptide carrier, a protein carrier or a polysaccharide carrier. Pieken et al. does not describe or disclose this specific combination. None of the examples of Pieken et al. involve the conjugation of a carbohydrate to any other macromolecule, much less with a peptide, protein or polysaccharide.

Pieken et al. would have provided no guidance that would have lead to selecting only a carbohydrate combined with a peptide, protein or polysaccharide from the myriad of potential combinations possible from the generic list of macromolecules provided in Pieken et al. Thus, the specific biomolecule combination recited in claims 16 and 21 is not described in Pieken et al., and thus Pieken et al. is not an anticipatory document.

Claim 21 was rejected under 35 U.S.C. §102(e) over Perbost (US 6,171,979). Perbost discloses a method for making arrays of polymer covalently bonded to the surface of a solid support that includes conducting a cycloaddition reaction between a polymer that includes a cycloaddition-reactive group and a support whose surface includes a cycloaddition-reactive group. The cycloaddition-reactive group can be a diene or a dienophile. Column 5, line 56 – column 6, line 14, describe a wide variety of possible dienophiles. Maleimide is listed at column 5, line 66, as a possible group, but it does not fall within the preferred dienophile generic formula depicted at the top of column 6. Perbost's description of possible dienophiles includes hundreds, if not thousands, of possible compounds. The preferred dienophile generic formula itself includes hundreds of possible compounds. None of the specific examples in Perbost employ a maleimide.

Accordingly, there is nothing in Perbost that would have lead to the selection of maleimide out of all of the thousands of possible dienophiles. In contrast, the immobilized biomolecule of claim 21 includes a structure that is derived from a maleimide. Since Perbost does not describe the specific structure of claim 21, it cannot anticipate claim 21.

Moreover, column 7, lines 3-7, of Perbost state that "[p]olymeric binding agents of particular interest include biopolymeric molecules, such as peptides, nucleic acids, polysaccharides and the like, where peptides and nucleic acids, as well as synthetic mimetics thereof, are of particular interest in many embodiments." However, the emphasis of the Perbost disclosure focuses on nucleic acids which differ dramatically from the biomolecules now recited in claim 21. Indeed, there are no specific examples in Perbost of a construct that includes a carbohydrate (or a carbohydrate conjugated via a maleimide ring). For this additional reason, the pending rejection of claim 21 over Perbost et al. must be withdrawn.

Claim 16 has been rejected under 35 U.S.C. §102(a) over Picken (WO 00/31102). Picken is relied upon for allegedly anticipating the first structure shown in original claim 16. This structure has now been deleted from claim 16 so the rejection over Picken must be withdrawn.

Claim 21 has been rejected under 35 U.S.C. §102(b) over Pieken et al. (US 5,874,532). Pieken et al. discloses a method for the sequential solution phase synthesis of oligonucleotides and peptides. There is no mention in Pieken et al. of immobilizing a carbohydrate. Hence, the rejection over Pieken et al. must be withdrawn.

It is respectfully submitted that the present application is in condition for allowance. Should there be any questions regarding this application, examiner Ceperley is invited to contact the undersigned attorney at the telephone number shown below.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

By 

Wayne W. Rupert
Registration No. 34,420

One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Telephone: (503) 595-5300
Facsimile: (503) 595-5301